



Cigar Box Guitar

Written By: Mark Frauenfelder



TOOLS:

- [Coping saw \(1\)](#)
- [Drill \(1\)](#)
- [File \(1\)](#)
- [Hammer \(1\)](#)
- [Hole saw \(1\)](#)
- [Jeweler's file \(1\)](#)
- [Magnifying glass \(1\)](#)
- [Marker \(1\)](#)
or paint
- [Miter box \(1\)](#)
- [Pencil \(1\)](#)
- [Phillips screwdriver \(1\)](#)
- [Sandpaper \(1\)](#)
- [Sharpie marker \(1\)](#)
or paint
- [Stanley Surform shaver \(1\)](#)
- [T-square \(1\)](#)
or carpenter's square
- [Utility knife \(1\)](#)
- [Wire cutters \(1\)](#)
- [Wood saw \(1\)](#)



PARTS:

- [Cigar box \(1\)](#)
I buy them at my local cigar store for \$3 each. You can also find them on eBay.
- [Lumber \(3' length\)](#)
The actual dimensions are 3/4"x1 1/2". A 6' stick, enough for 2 necks, costs about \$10. Pick the straightest, flattest, clearest (meaning free of knotholes), piece you can find.
- [Guitar strings \(1\)](#)
CBGs typically use open G tuning. I use strings 5, 4, and 3 and tune them to G-D-G.
- [Tuning pegs \(6\)](#)
You can buy a set of 6, enough to build two 3-stringers, for \$10. Sometimes they're called "tuning machines."
- [Fret wire \(1\)](#)
\$10. You can also use flat toothpicks or go fretless.
- [Cabinet hinge \(1\)](#)
- [Wood screws \(1\)](#)
Grip-Rite Fas'ners work well.

- [Yardstick \(1\)](#)

- [Barbecue skewer \(1\)](#)
or other hard, thin rod for the bridge and nut. A 3/16×2" bolt also works well for the nut.
- [Super glue \(1\)](#)
optional

SUMMARY

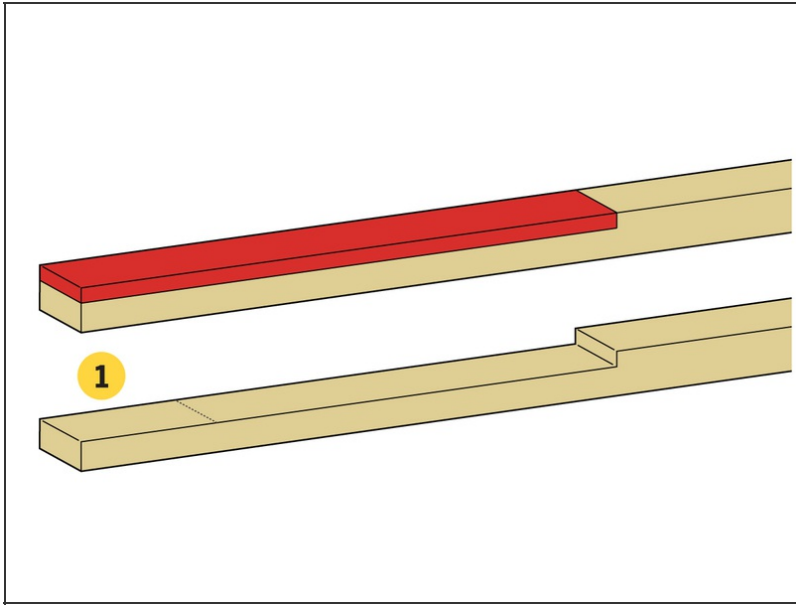
Here are instructions for making a cigar box guitar (CBG) Because every CBG is built by hand, using different found and scrounged materials, no two sound alike. I love the suspense of not knowing what kind of “personality” a CBG is going to have until it’s completed. Here’s how to make a plain-vanilla, 3-string CBG that requires a minimum of tools and parts, yet sounds great.

Step 1 — Make the neck.



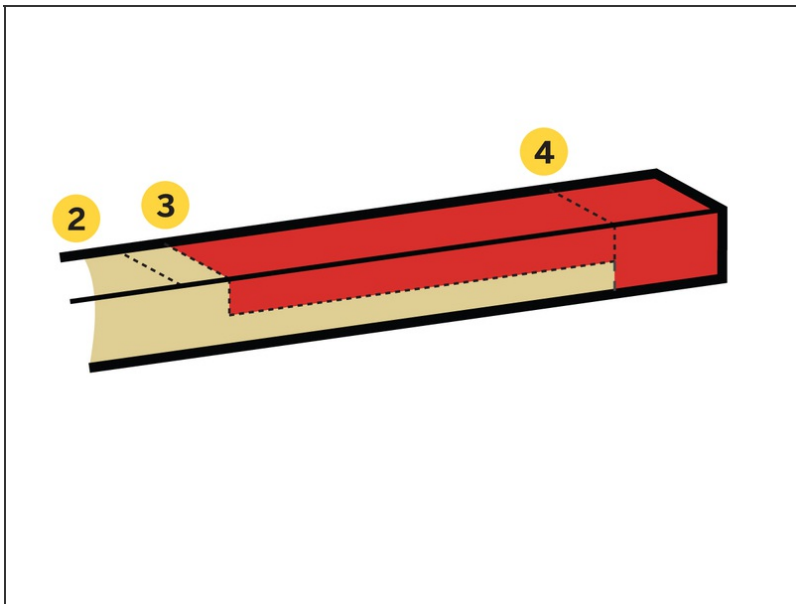
- To begin, we'll cut the neck to length, make the headstock (the part where the tuning pegs go), and saw off a rectangular slice so that the fretboard is flush with the cigar box lid. Making the neck and installing the frets are the most time-consuming parts of the build. Once you're finished preparing the neck, you'll be surprised by how fast the rest of the build goes!
- Using a wood saw, cut the oak or maple lumber to 36". You'll have to cut it a little shorter later on, but it's good to start out with more than enough.

Step 2



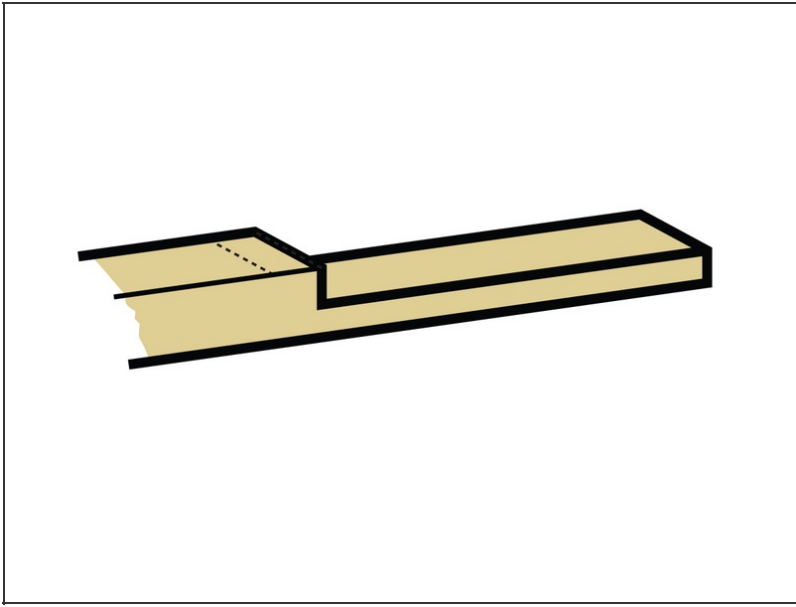
- Saw off a rectangular slice from the lower end. This is the end that goes into the cigar box. Measure the length and thickness of the cigar box lid. I use the box itself as a guide, tracing along the oak stick with a pencil. Mark these dimensions on the wood, then use a saw to remove the part shaded red in the illustration.

Step 3



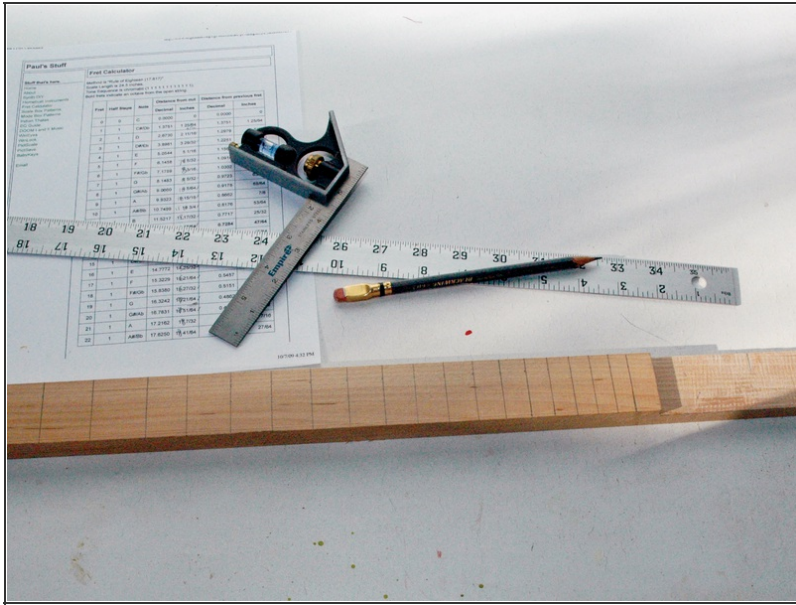
- Mark the lines for the nut and headstock. Starting from the pencil mark you just made for the bridge, make another mark indicating the scale length (I decided on a scale length of $24\frac{1}{2}$ "). This second mark is where the nut will go. Make a third mark $\frac{1}{2}$ " farther past the nut. Make a fourth and final pencil mark $3\frac{1}{2}$ " beyond the third mark.


Step 4



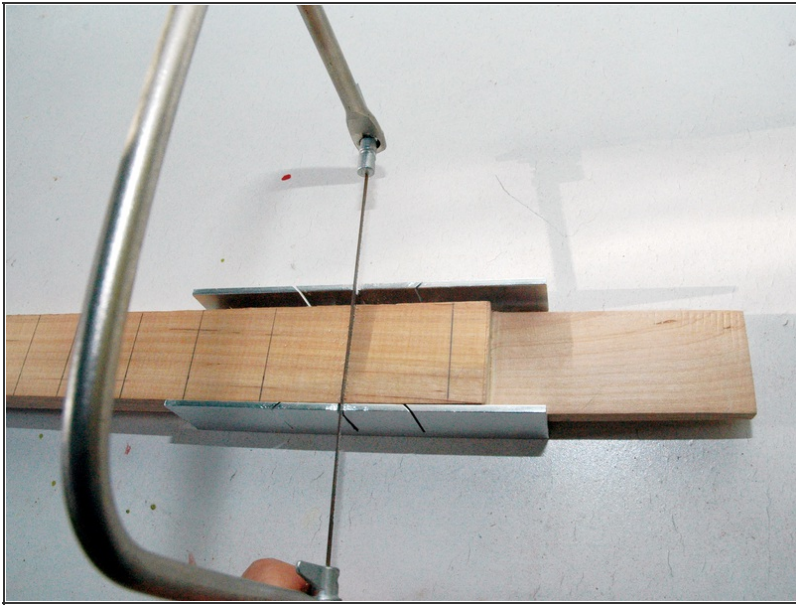
- Sand the fretboard. Now is a good time to sand the top surface of the neck so it's dead flat. Use a sanding block, starting with rough sandpaper and finishing with fine-grit sandpaper.

Step 5 — Install the frets.



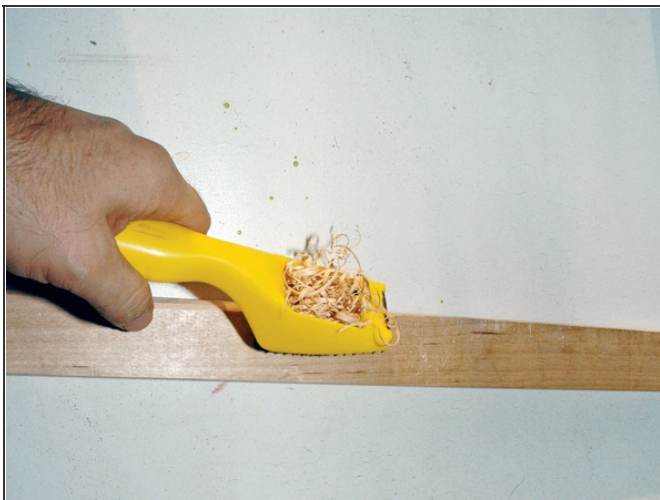
- I used to be intimidated by the idea of frets. The process seemed mysterious and difficult. But it's really not. If you take your time and make careful measurements, you'll have no problem.
- Mark the fret locations. Enter your desired scale length into an online fret spacing program (a simple online fret calculator can be found at <http://www.buildyourguitar.com/resources...>) and print out the table it generates. Using a yardstick and a square, make pencil marks along the length of the neck to indicate the location of the frets.
- NOTE: If you don't want to install metal frets, you can  glue flat toothpicks over the pencil marks. They work well, but will eventually wear out. If you want a fretless guitar, go over the pencil marks with a Sharpie or some paint.

Step 6



- Cut the fret slots. About 1/16" should be deep enough. The saw blade should be thin enough so the fret tangs bite into the slots you cut. I buy medium-gauge fret wire and have had no problem with frets popping out. A coping saw and a hobbyist's miter box will help you keep the fret slots square with the neck.

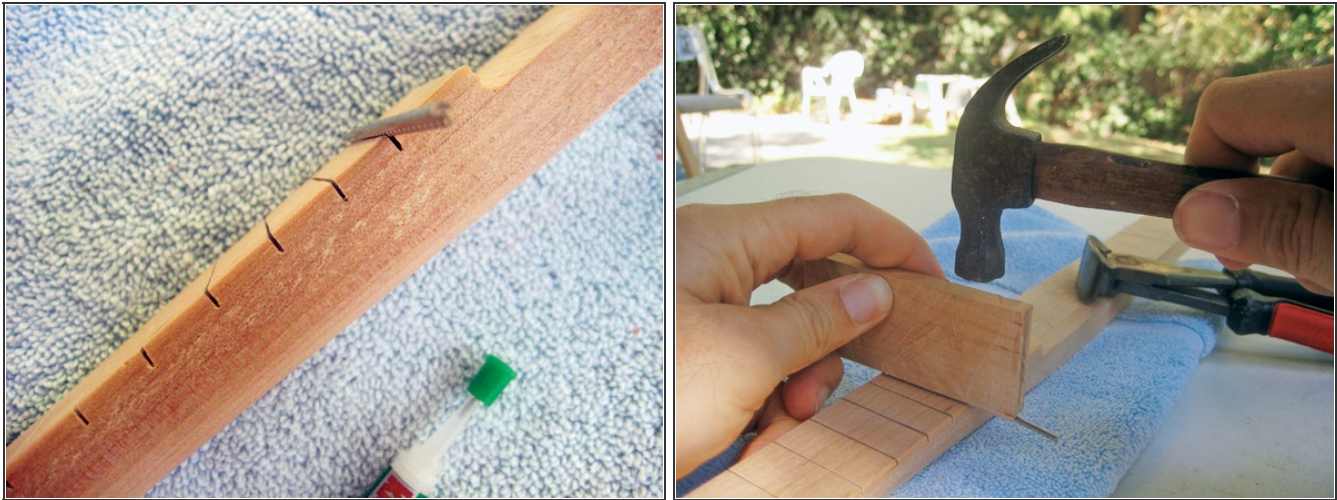
Step 7



- Form the back of the neck. On the backside of the neck, shape the sharp 90° edges into soft curves so your fretting hand can easily slide up and down the neck. A Surform shaver tool will quickly rough out a rounded edge. Follow up with sandpaper until the wood is very smooth.
- NOTE: Don't shave the headstock or the part that will fit into the cigar box — only work on the area under the frets and nut.



Step 8



- Tap the frets into the slots. Fret wire usually comes pre-cut, and each piece is about an inch longer than the width of the neck. The wire's cross section is T-shaped, and the barbed center rail goes into the slot.
- At each fret slot, align one end of the fret wire so it overhangs the side of the neck just a fraction of an inch. Press the fret wire into the slot, then place a thin block of wood on the fret and tap on the block with a hammer until the fret is all the way in.
- NOTE: You can smear a tiny bead of super glue across the part of the fret that fits in the slot if you wish, but I usually skip it, because it's hard to keep the glue from getting onto the neck.

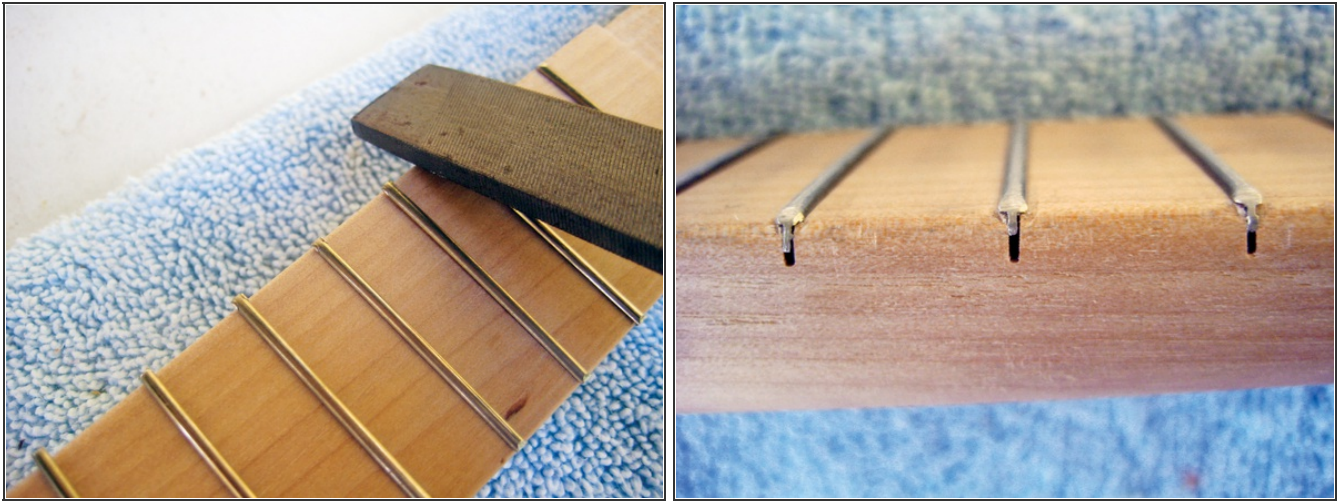


Step 9

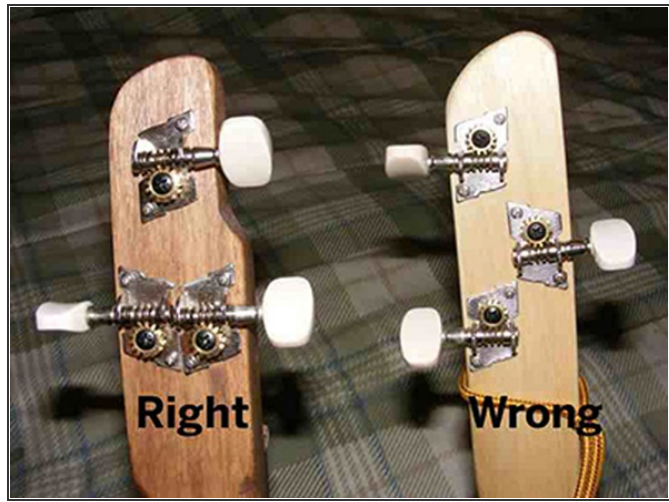


- Clip the fret wire. Cut it almost flush with the neck. Repeat Steps 2d and 2e until all frets are installed. I installed 21 frets on my cigar box guitar.

Step 10



- File the ends of the frets. The cut ends of the fret wires are very jagged and would shred your hands if you attempted to play without filing them smooth. Use a file to form a gentle curve on both ends of each fret. (If you have a store-bought guitar handy, inspect it to see how the frets should look.) Run your hand up and down the neck. If your skin snags, you need to keep filing! Use a magnifying glass and look for any small burrs that need to be filed off with a jeweler's file.

Step 11 — Install the tuning pegs.

- Study the geometry of your tuning pegs and determine where the headstock holes need to be drilled so that the strings and pegs won't interfere with each other. Keep in mind the location of the mounting screws — they shouldn't be too close to the edge of the headstock, or they might split the wood.
- For each peg, drill a large hole for the post and 2 small pilot holes for the mounting screws. A drill press will make things easier, but if you use a handheld drill, try your best to drill straight down.
- TIPS: Be sure to mount the pegs so their winding shafts are above the gears, not below. That way, your guitar will stay in tune longer. Also, when you drill the holes for the posts, use drill bits made for wood. I used the wrong kind of bit and it tore out big splinters.



Step 12 — Attach the neck and hardware.



- Cut a hole (a 3-sided notch) in one end of the box for the neck. Measure the cross section of the part of the neck that fits inside the cigar box, and draw a matching rectangle on the inside of the box.
- Use a coping saw to cut the 2 vertical lines, then use a utility knife to score the horizontal line several times until you can snap off the rectangle. Insert the neck, close the lid, and make sure the fretboard is flush with (or a tiny bit higher than) the lid.
- If the fretboard is lower than the lid, sand down the cut-out part of the neck that comes into contact with the lid until the fretboard is flush with (or a tiny bit higher than) the lid.



Step 13



- Now we'll screw the neck to the box. I try to use as little glue as possible when I make a cigar box guitar because I don't like waiting for the glue to dry, and screws make it easy to take the guitar apart for repairs, modifications, or salvage.
- Drill a pilot hole in the far end of the box and drive a screw through the box into the neck. Close the lid and then pilot-drill and drive 2 more screws through the lid of the box into the neck (if you later want to install a pickup, you can easily remove these screws).

Step 14



- Attach the tailpiece. Fold the cabinet hinge centered over the front lower edge of the cigar box, then drill pilot holes and screw it to the lower end of the box. The hinge will sit over the screw you inserted in the previous step.

Step 15

- Now that the neck is complete, the rest is smooth sailing!
- Paint position marker dots on the neck. Use paint or a Sharpie to make dots above frets 3, 5, 7, 9, and 12.

Step 16



- String the guitar. Thread the barrel ends of the strings through the hinge's unused mounting holes. Wind the other ends of the strings onto the tuning pegs, but not too tight yet. Here's a good video that will teach you how to wind a guitar string:
<http://www.makezine.com/go/guitarstring>.
- NOTE: I inserted a screw to keep the middle string centered in the headstock. You might have to do this too.



Step 17

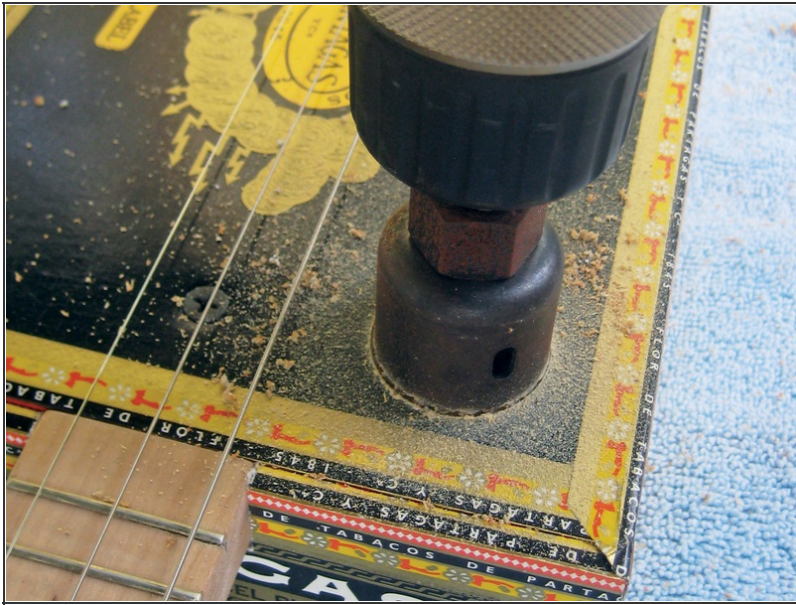


- Slip in a bridge and a nut under the strings. I used a wooden barbecue skewer to make the bridge and the nut. Snip 2 pieces to size and place one above the line you drew for the nut. Place the other under the strings on the cigar box at a distance equal to the scale length you chose; this is the bridge.

Step 18

- Screw down the tailpiece. Drill a hole through the hinge and drive a screw through it into the lid and the neck. This will increase tension on the strings and prevent rattling.

Step 19



- Make a sound hole. Use a small hole saw ($\frac{3}{4}$ " diameter or so) to cut a sound hole in the top of the box. Make sure to position the hole so it doesn't cut into the neck. (I made this mistake when I made my first cigar box guitar!)
- Guess what — you've built your guitar! In the next section, I'll explain tuning and playing, as well as direct you to other helpful cigar box guitar resources.

Step 20 — Get in tune.

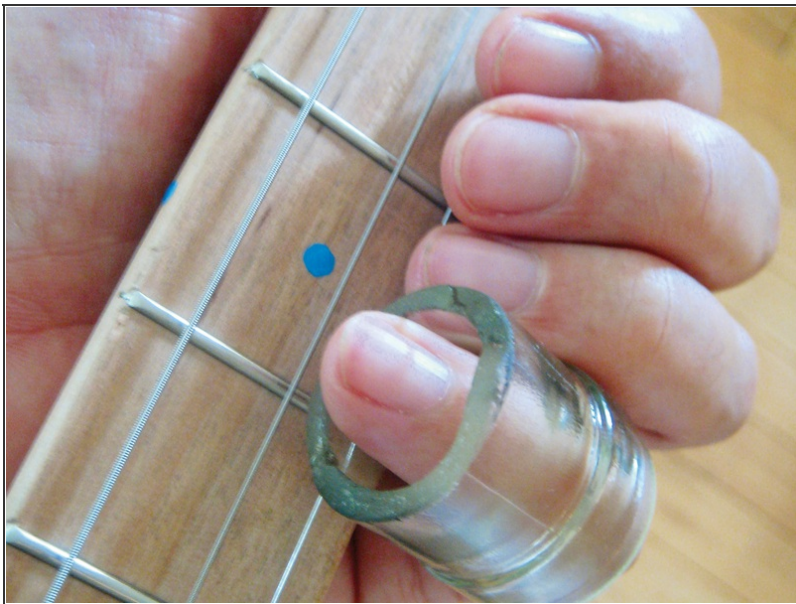


- The most popular tuning for cigar box guitars is called open G tuning. Many of the original blues guitar players used open G, and it's a favorite with Keith Richards of the Rolling Stones.
- Visit makezine.com/21/cbg for an MP3 file of this tuning played string by string on a six-string guitar. For the CBG, you can ignore the first string that's plucked, and tune it to the 3 strings after that: G, D, and G.

Step 21 — Free Online Lessons

- Keni Lee Burgess, a well-known New York street musician, has posted a terrific series of cigar box guitar lessons on YouTube.
- Shane Speal, co-founder of <http://www.cigarboxnation.com>, also has fun lessons on YouTube that show you how to use a slide, and how to experiment with different tunings and scales. Visit the URL above for links to both of these series.

Step 22 — Make a bottleneck slide.



- Bottleneck slides sound great with open tuning, and both Burgess and Speal use them to enhance their playing. To make one, take an empty wine bottle and score a ring around the neck with a Dremel cutting disc (wear eye protection).
- Wearing a pair of oven mitts, tap the score line with a spoon and snap off the neck (do this over a trash can to capture the shards).
- Sand off the rough edges and you've got something far superior to a store-bought slide. YouTube has instructional videos on making bottleneck slides using different techniques.

Step 23 — Turn it up!

- You can electrify your cigar box guitar in 2 ways. The easiest is by adding a piezoelectric buzzer. Buy one at RadioShack or salvage one from a discarded smoke alarm. Carefully crack open the plastic housing, remove the metal disc, and sandwich it between the neck and lid of your guitar. Wire it to a patch cord jack and plug into an amp (if you don't have an amplifier, make our [Cracker Box Amp](#)).
- Another way to electrify a cigar box guitar is by adding an electromagnetic pickup.

NOTE: This project first appeared in MAKE Volume 21, page 76. <http://makezine.com/21>

Related Posts on Make: Online:

How-To: Electric Cigar Box Guitar

<http://blog.craftzine.com/archive/2009/0...>

Intern's Corner: Cigar Box Guitar Bloopers

<http://blog.makezine.com/archive/2009/12...>

Cigar Box Guitar Build Notes

<http://blog.makezine.com/archive/2010/02...>

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